

November 18, 2003

Via Electronic Filing

Ms. Marlene H. Dortch

Secretary

Federal Communications Commission

445 12th Street, S.W.

Washington, D.C. 20554

**Re: Mobile Satellite Ventures Subsidiary LLC
Written *Ex Parte* Presentation
IB Docket No. 01-185**

Dear Ms. Dortch:

Since the filing of its Petition for Reconsideration,¹ Mobile Satellite Ventures Subsidiary LLC ("MSV") has discovered that the Commission appears to have made a mathematical error in calculating the PFD limits L-band ATC base stations must satisfy at the edge of waterways and airport runways/aircraft stand areas. MSV requests that the Commission (i) on its own motion correct this error and clarify that it intended to require L-band ATC base stations to satisfy a PFD limit of -69.4 dBW/m²/carrier at the edge of waterways and -64.6 dBW/m²/carrier at the edge of airport runways/aircraft stand areas and (ii) adopt MSV's request, as made in its Petition, that these limits be relaxed by 15 dB to -54.4 dBW/m²/carrier at the edge of waterways and -49.6 dBW/m²/carrier at the edge of airport runways/aircraft stand areas. *MSV Petition* at 19.

Clarification of PFD Limits for L-band ATC Base Stations. In the *ATC Order*, the Commission adopted rules requiring L-band ATC base stations to satisfy specific PFD limits at the edge of waterways and airport runways/aircraft stand areas to protect Inmarsat maritime METs and land-based METs located at airport runways/aircraft stand areas from overload interference. 47 C.F.R. § 25.253(d)(4), (5). Specifically, the rules require an L-band ATC base station to satisfy a PFD level of -64.6 dBW/m²/200 kHz at the edge of waterways and -73.0 dBW/m²/200 kHz at the edge of airport runways/aircraft stand areas. *Id.* As discussed in the attached Appendix, using a basic formula to calculate PFD with the same parameters assumed in the Commission's analysis, MSV has discovered that the Commission has miscalculated its adopted PFD limits. In the waterway case, the Commission has overstated the PFD limit by 4.8 dB (the corrected limit is -69.4 dBW/m²/carrier). In the airport runways/aircraft stand areas case, the Commission has understated the required PFD limit by 8.4 dB (the corrected limit is -64.6 dBW/m²/carrier). MSV requests that the Commission on its own motion correct this error and

¹See Mobile Satellite Ventures Subsidiary LLC, Petition for Partial Reconsideration and Clarification, IB Docket No. 01-185 (July 7, 2003) ("*MSV Petition*").

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clarify that it intended to adopt these corrected limits rather than the limits adopted in the *ATC Order*.²

MSV's Request for 15 dB Relaxation in PFD Limits. In its pending Petition for Reconsideration of the *ATC Order*, MSV has asked the Commission to relax its adopted PFD limits by 15 dB to account for its use of an overload threshold for Inmarsat maritime and land-based METs that is overstated by 15 dB. *MSV Petition* at 19 and Appendices C and E; *see ATC Order*, Appendix C2 §§ 2.2.2.1, 2.2.1.3. Given that the PFD limits adopted in the *ATC Order* were miscalculated, MSV hereby requests that the Commission instead adopt the following PFD limits which are 15 dB less stringent than the PFD limits as corrected herein which the Commission intended to adopt: -54.4 dBW/m²/carrier at the edge of waterways and -49.6 dBW/m²/carrier at the edge of airport runways/aircraft stand areas.

Please direct any questions regarding this matter to the undersigned.

Very truly yours,

/s/Bruce D. Jacobs
Bruce D. Jacobs

cc: Breck Blalock
Richard Engelman
Howard Griboff
Paul Locke

²“It is well settled that an agency has the authority to correct inadvertent ministerial errors, even after the agency has taken final action.” *Lawrence BEHR, Order*, 17 FCC Rcd 19025, ¶ 6 (Wireless Bureau, September 30, 2002) (*citing American Trucking Ass’n v. Frisco Transportation Co.*, 358 U.S. 133, 145-146 (1958) (“[t]o hold otherwise would be to say that once an error has been done the agency is powerless to take remedial steps”). The Commission can make ministerial amendments to its rules without requiring notice and comment. 47 U.S.C. § 553(b)(3)(A),(B); *see, e.g., Amendment of Part 101, Report and Order*, 17 FCC Rcd 15040, ¶ 19 (July 31, 2002). Moreover, the Commission, on its own motion, may reconsider any action taken in a proceeding while a petition for reconsideration is pending. *See Implementation of Section 11(c), Order on Reconsideration*, 15 FCC Rcd 1167 (January 19, 2000) (*citing Central Fla. Enters., Inc. v. FCC*, 598 F.2d 37, 48 n.51 (D.C. Cir. 1978), *cert. dismissed*, 441 U.S. 957 (1979)).

Appendix

Corrected PFD Limit for Base Stations at the Edge of Airport Runways/Aircraft Stand Areas and Waterways

The purpose of this Appendix is to calculate the power flux density (“PFD”) limits the Commission intended to adopt for L-band ATC base stations at the edge of airport runways/aircraft stand areas and waterways.

A. Formula for Calculating PFD. A basic formula for calculating PFD is as follows:

$$P = \text{PFD} + 10\log(\lambda^2/4\pi) + G + P_D \quad (1)$$

where,

$P \equiv$ Received power at the output port of an antenna (dBW)

$\text{PFD} \equiv$ Aggregate power flux density at the antenna location (dBW/m²)

$\lambda \equiv$ Wavelength of received signal (m)

$G \equiv$ antenna gain (dBi)

$P_D \equiv$ Discrimination due to polarization mismatch between antenna and received signal (dB)

$10\log(\lambda^2/4\pi) =$ Effective area of an isotropic antenna (dBm²)

B. Formula for Calculating PFD Limit for L-band ATC Base Stations to Protect Inmarsat METs. L-band ATC base stations are required to radiate LHCP. Thus, PFD limits for L-band ATC base stations at the edge of airport runways/aircraft stand areas and waterways should be specified in LHCP. Inmarsat METs receive RHCP signals. Thus, using the above formula, for a given LHCP PFD level for an L-band ATC base station at a given location, the RHCP received power by an Inmarsat MET at that location can be expressed as:

$$P(\text{RHCP}) = \text{PFD}(\text{LHCP}) + 10\log(\lambda^2/4\pi) + G + P_D(\text{LHCP} \rightarrow \text{RHCP}), \quad (2)$$

where,

$P(\text{RHCP}) \equiv$ Received power at the MET antenna output port (dBW)

$\text{PFD}(\text{LHCP}) \equiv$ **Aggregate** received power flux density at location of MET (dBW/m²)

$\lambda \equiv$ Wavelength (m) = $c/f = (3 \times 10^8 \text{ m/s})/(1.54 \times 10^9 \text{ Hz})$

$G \equiv$ Inmarsat MET antenna gain **in direction of** ATC base station (dBi)

$P_D(\text{LHCP} \rightarrow \text{RHCP}) \equiv$ Discrimination due to polarization mismatch between the received LHCP signal and the Inmarsat MET RHCP antenna (dB) = -8 dB

$$10\log(\lambda^2/4\pi) = -25.2 \text{ dBm}^2$$

Further:

$$\text{PFD}(\text{LHCP}) = \text{PFD}_C(\text{LHCP}) + 10 \log(n), \quad (3)$$

where,

$\text{PFD}_C(\text{LHCP}) \equiv$ Received power flux density **per** radiated carrier (dBW/m²)

$n \equiv$ Number of radiated carriers that are visible to the Inmarsat MET.

Substituting equation (3) into (2) we have:

$$P(\text{RHCP}) = \text{PFD}_C(\text{LHCP}) + 10\log(n) + 10\log(\lambda^2/4\pi) + G + P_D(\text{LHCP} \rightarrow \text{RHCP}).$$

Solving for $\text{PFD}_C(\text{LHCP})$, the formula for calculating the PFD limit for L-band ATC base stations to protect Inmarsat METs is as follows:

$$\text{PFD}_C(\text{LHCP}) = P(\text{RHCP}) - 10\log(n) - 10\log(\lambda^2/4\pi) - G - P_D(\text{LHCP} \rightarrow \text{RHCP}).$$

C. Calculation of PFD Limits for L-band ATC Base Stations

(1) *Waterways.* To calculate the appropriate PFD limit for base stations near waterways, the following parameters (identical to those assumed by the Commission) are used in the above formula:

$$n = 3$$

$$G = (21 - 13.2) \text{ dBi}$$

$$P_D(\text{LHCP} \rightarrow \text{RHCP}) = -8 \text{ dB}$$

This results in the following PFD limit for base stations at the edge of waterways:

$$\text{PFD}_C(\text{LHCP}) = -90 - 4.8 + 25.2 - 7.8 + 8 = \mathbf{-69.4 \text{ dBW/m}^2}$$

(2) *Airport runways/aircraft stand areas.* To calculate the appropriate PFD limit for base stations at the edge of airport runways/aircraft stand areas, the following parameters (identical to those assumed by the Commission) are used in the above formula:

$n = 6$ (to reflect that transmissions of up to two base station sectors, each transmitting up to three carriers, may be visible to the Inmarsat MET)

$G = 0$ dBi

$P_D(\text{LHCP} \rightarrow \text{RHCP}) = -8$ dB.

This results in the following PFD limit for base stations at the edge of airport runways/aircraft stand areas:

$$\text{PFD}_C(\text{LHCP}) = -90 - 7.8 + 25.2 + 8 = \mathbf{-64.6 \text{ dBW/m}^2}$$

TECHNICAL CERTIFICATION

I, Dr. Peter D. Karabinis, Vice President & Chief Technical Officer of Mobile Satellite Ventures Subsidiary LLC ("MSV"), certify under penalty of perjury that:

I am the technically qualified person with overall responsibility for preparation of the technical information contained in the foregoing letter. I am familiar with the requirements of the Commission's rules, and the information contained in the letter is true and correct to the best of my belief.

/s/Peter D. Karabinis
Dr. Peter D. Karabinis
Vice President & Chief Technical Officer

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